

Reflections of a TMS International Scholar: Sharing Research across Cultures and Continents

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I was honored to be selected as the 2017 Japan Institute of Metals (JIM)/TMS Young Leaders International Scholar, an opportunity made possible by the TMS Foundation. One of the benefits of receiving this award for me was traveling to Japan to visit the National Institute for Materials Science (NIMS), and attending the 2017 JIM Annual Spring Meeting, held at the Tokyo Metropolitan University.

My journey started with a little homework in preparation for my trip to Japan. During the TMS 2017 Annual Meeting in San Diego, I talked with a few colleagues who were former TMS International Scholars. They shared their experiences with me and offered some very helpful suggestions regarding my travel for what was soon to be a most rewarding cultural and professional experience. Yoshimasa Kajiwara, a special

advisor to the JIM secretary general, was my point of contact during my journey. He connected me with my host, Yoko Yamabe-Mitarai from the National Institute for Materials Science (NIMS), who I found to be an outstanding and very energetic scientist.

My experience as a TMS International Scholar began in earnest upon my arrival at Tokyo Haneda airport. Finding myself in the middle of Japan's fast-paced society was an amazing experience. The Japanese have a well-developed system of public transportation, which makes for easy travel, even for visitors who don't speak the language.

The next morning, I traveled to NIMS where I gave a seminar on the characterization of nickel-base alloys fabricated by electron beam melting. I also shared my other research interests in high-temperature structural materials and in situ closed-cell gas reactions via scanning transmission electron microscopy methods that I have been involved in at Oak Ridge National Laboratory. This led to excellent discussions throughout the day with many scientists working at NIMS that I hope will lead to future collaborations.

After the seminar, I met with a number of outstanding scientists, including Kyoko Kawagishi and Ayako Ikeda from the Superalloys Research Group Energy Infrastructure Materials Field Research Center for Structural Materials. Kawagishi is conducting ongoing research on Ni-base superalloys with a focus on fabrication of single crystals via additive manufacturing. I was most fortunate to visit her very impressive and well-managed laboratories.

I also had the pleasure of meeting with Satoshi Kishimoto, who is a



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The TMS Young Leaders International Scholar Program, made possible by the TMS Foundation, has given promising young minerals, metals, and materials professionals the opportunity to develop important global collaborations since 2005. This competitive program is offered in conjunction with the Japan Institute of Metals and Materials (JIM) and the Federation of European Materials Societies (FEMS).

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chief researcher in the Microstructure Analysis Technology Group. I visited his laboratory and learned about his research on microstrain deformation measurements via the femtosecond laser exposure system to fabricate model grids for the charge-coupled device moiré method, scanning laser moiré method, and electron moiré method for microstrain deformation measurements.

Hideyuki Murakami, group leader of the Surface and Interface Kinetics Group, likewise met with me and we discussed the oxidation behavior of structural materials. I was fascinated with the ongoing research on heat-resistant steel being conducted under the supervision of Yoshiaki Toda, the principal researcher in the High Temperature Material Design Group. Unfortunately I am not able to list in this article the many other scientists I spoke with, but I am most grateful to everyone from NIMS for taking the time to share their research with me and for being so very kind and welcoming.

After my visit to NIMS, Yoko Yamabe-Mitarai accompanied me that evening on a train ride to my next hotel, near the Tokyo Metropolitan University, Minami-Osawa Campus, where the 2017 JIM Spring Annual Meeting was held. Although it was her son's graduation day, she took the time to help me relocate from Tsukuda to Hashimoto. I truly appreciate all her help not only during that evening but also throughout my experience in Japan.

For the rest of my stay, I attended the 2017 JIM Annual Spring Meeting. The meeting started with a formal awards ceremony, where I was introduced as the TMS Young Leaders International Scholar by the JIM Secretary General, Hideaki Yamamura, who served as the master of ceremonies. During the meeting, I gave a presentation on the additive manufacturing of nickel-base alloys, work that has been sponsored by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Advanced Manufacturing Office, under contract DE-AC05-00OR22725 with UT-Battelle, LLC.

At the conclusion of my presentation, I was honored with a certificate



acknowledging my participation in the TMS/JIM Young Leaders International Scholar program from the session chair, Yoshihiro Terada, an associate professor at the Tokyo Institute of Technology.

I was most impressed by the high caliber of the presentations given at the conference, not only by senior researchers and professors, but also by young students and early career scientists. A number of female students were in attendance and gave excellent presentations on cutting-edge research. At a banquet hosted by the meeting organizers, I was able to talk to many professors and researchers from Japan and learn not only about their research but also about their culture.

I highly encourage anyone who is eligible to apply for the TMS Young Leaders International Scholar Award to do so. I would also like to thank the Japan Institute of Metals and the TMS Foundation for making my visit possible. It was an outstanding research experience as well as unique opportunity to experience Japanese culture, visit Tokyo, and make new friends.

Developing working relationships with new international colleagues is a primary goal of the TMS Young Leaders International Scholar program. Pictured during an evening event at the 2017 JIM Annual Spring Meeting are (from left): Hideaki Yamamura, JIM Secretary General; Yasuharu Shirai, Emeritus Professor of Kyoto University, JIM President; Kinga Unocic, Research Staff, Oak Ridge National Laboratory; Yoshihisa Kajiwara, JIM Special Advisor; Yoko Yamabe-Mitarai, Deputy Director, Research Center for Structural Materials, National Institute for Materials Science.



Unocic receives formal recognition as a JIM/TMS Young Leaders International Scholar from Yoshihiro Terada (right) at the conclusion of her award lecture.